

Title (en)  
Spark plug

Title (de)  
Zündkerze

Title (fr)  
Bougie d'allumage

Publication  
**EP 0899839 B1 20040121 (EN)**

Application  
**EP 98306866 A 19980827**

Priority  
• JP 23128297 A 19970827  
• JP 36492197 A 19971218  
• JP 36492297 A 19971218

Abstract (en)  
[origin: EP0899839A1] In a spark plug (100), a resistor (15) is placed between a terminal (13) and a center electrode (3) within a through hole (50) of an insulator (2). The through hole (50) of the insulator (2) has a first portion (51) which allows the center electrode (3) to be inserted therethrough, and a second portion (52) which is formed on a rear side of the first portion (51) so as to be larger in diameter than the first portion (51) and which accommodates the resistor (15) therein, where the second portion (52) is connected to the first portion (51) via a connecting portion (55) including a two- or more-stepped reduced-diameter portion. Then, an electrically conductive glass seal layer (16) is placed at a position corresponding to the connecting portion (55) between the resistor (15) and the center electrode (3). When the glass seal layer is formed by filling electrically conductive glass powder and its heating and compression, the pressurizing cross-sectional area in the axial direction is reduced to an extent of diameter reduction by the reduced-diameter portion of the connecting portion (55), so that a sufficient compressing force can be ensured in event that the pressurizing force is lost, for example, due to friction between the upper filler material (e.g., resistor material powder) and the wall surface of the through hole (50). By virtue of this arrangement, the sintering of the glass seal layer (16) progresses sufficiently so that the burns of carbon in the glass seal portion and the oxidization of metal components become unlikely to occur. Thus, such trouble as increase in conduction resistance can be avoided over a long term. <IMAGE>

IPC 1-7  
**H01T 13/41**

IPC 8 full level  
**H01T 13/41** (2006.01)

CPC (source: EP US)  
**H01T 13/34** (2013.01 - EP US); **H01T 13/41** (2013.01 - EP US)

Citation (examination)  
• JP H08315954 A 19961129 - NGK SPARK PLUG CO  
• EP 0377938 A2 19900718 - NGK SPARK PLUG CO [JP]

Cited by  
CN103140998A; EP2752949A4; EP3312954A4; US7443089B2

Designated contracting state (EPC)  
DE FR GB IT

DOCDB simple family (publication)  
**EP 0899839 A1 19990303; EP 0899839 B1 20040121**; DE 69821172 D1 20040226; DE 69821172 T2 20041118; DE 69837406 D1 20070503; DE 69837406 T2 20071129; EP 1306948 A2 20030502; EP 1306948 A3 20040114; EP 1306948 B1 20070321; US 6191525 B1 20010220

DOCDB simple family (application)  
**EP 98306866 A 19980827**; DE 69821172 T 19980827; DE 69837406 T 19980827; EP 03000848 A 19980827; US 14074298 A 19980826